Gel Documentation System

Gerix

Installation and Operating Instructions

BIOTEC-FISCHER GmbH * Daimlerstrasse 6 * 35447 Reiskirchen
Tel: +49-6408-6072 * Fax: +49-6408-64165
e-mail: info@biotec-fischer.de

To this means of work:

This manual serves to set up the PC-independent system Gerix correctly.

The operating instructions of the transilluminator and dark hood are available for continuative use.

Directory

1.	General information and preparation	4
1.1	Scope of delivery	4
1.2	Preparation for system setup	4
1.3	Setup of dark hood and transilluminator	4
1.4	Setup of basic system Gerix 1000	4
1.5	Connection of b/w-thermal printer Mitsubishi P93E	6
2.	Details on safe handling of Gerix 1000	7
2.1	Important safety instructions	7
2.1.1	Important details on system voltage	7
2.1.2	Important details on UV protection	7
2.2	Maintenance	8
3.	System specifications	9
4.	Insertion process	9
5.	Keyboard	10
6.	Functions	12
6.1	Live Image Mode	12
6.2	Exposure Mode	13
6.3	Saturation / Mode Automatic Illumination	14
6.4	Invert / Set	16
6.5	Capture Mode	17
6.6	Storage on USB sticks	18
6.7	Print-out of image displayed	20
7.	System Settings	21
7.1	Load Settings	22
7.2	Save Settings	23
7.3	Standard Settings	24
7.4	Date Format	25
7.5	Set Time / Date	26
7.6	Setting of key tones and automatic storage	28
7.7	Information	29
8.	Contact Details	29

1. General information and preparation

1.1 Scope of delivery

At the beginning, please check the contents according to the delivery note enclosed:

- Control unit of basic system Gerix 1000
- Camera with objective, close-up lens and filter
- Control wire to connect camera and control unit
- 3.5 mm phone jack wire
- Transilluminator e.g. UXT-20M-8K
- Dark hood e.g. DH-30
- Test gel for fluorescence
- 3 power cords

1.2 Preparation for system setup

Completely unpack and unwrap all single elements. It is recommended to place them directly on a stable surface.

Add the control wire and the power cords to the corresponding components.

1.3 Setup of dark hood and transilluminator

Place the transilluminator UXT-20M-8K with the front showing to you on the working surface. Make sure that the transilluminator is switched off (switch at the bottom of the front side).

Now, place the dark hood DH-30 on the transilluminator. The sliding door of the dark hood must be directed to you.

Then, mount the dark hood with 4 hinges on the transilluminator. Please check carefully if each of the hinges has clicked into place correctly.

Connect the dark hood and the transilluminator each with a power cord and a socket outlet grounded. The outlets of the components are at the backside. Please check again the connections before switch-on.

1.4 Setup of basic system Gerix 1000

Please carry out the instructions mentioned below very accurately and conscientiously as it mainly concerns damageable and optical elements.

1. Screw the objective on the camera. Please pay attention as it concerns a fine thread.
2. Screw the close-up lens on the objective.
3. Screw the filter according your application on the close-up lens.

4. Connect the 12-pin connector of the control wire with the respective connector of the camera. Please be very careful as no pin may be bent. By correct connection the nut locks in place with a click.
5. Place the round disc with the centre hole directly on the opening of the dark hood. Fractionally, move the disc to centre correctly over the round opening.
6. Fix the camera with the screw included to the camera angle of the dark hood. Use the disc and the rubber mat to achieve light tightness. The respective holes are adapted to the diameter of filter and objective. The rubber mat is moved over the objective in the way it fits densely to the metal sheet of the dark hood.
7. Connect the control wire with the 12-pin connector of the control unit. Don't forget to screw tight the coupling nut of the connector.
8. Connect the control unit with a socket outlet grounded using a power cord. The outlet for the power cord is at the back side of the control unit. Please check again the connections before switching on.

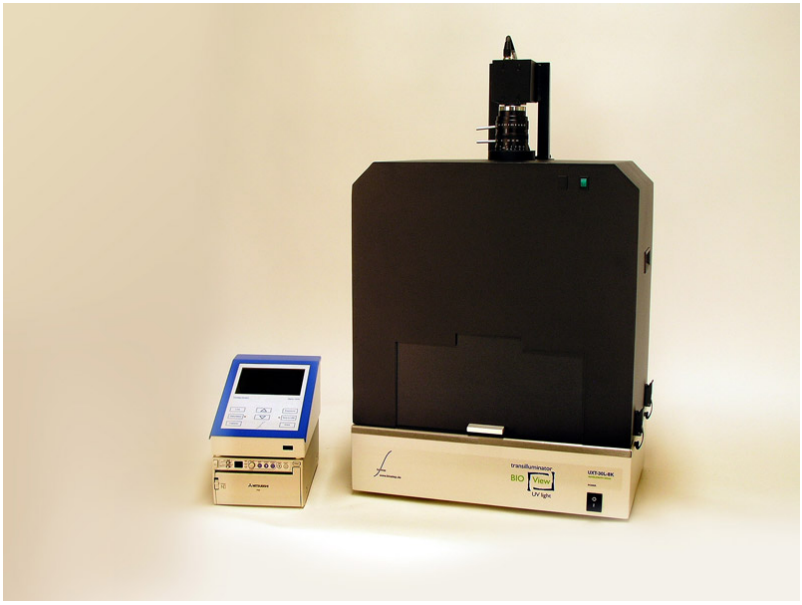


Image 1 System Gerix 1000 completely set up
(with thermal printer P93E, optional available)

Now, the system is ready for operation and can be used to expose gels. At the beginning it is recommended to work with a test gel included in the commodity.

1.5 Connection of b/w - thermal printer Mitsubishi P93E

In case the consignment includes the thermal printer P93E information on the connection with the system Gerix 1000 are given below:

1. Place the printer below or beside the system Gerix 1000.
2. Connect the BNC connector of the system with the BNC connector „VIDEO IN" of the printer using the BNC wire.
3. Connect the 3.5mm jack plug „REMOTE" of the printer with the 3.5mm jack plug of the system using the jack plug wire included in the commodity.
4. Connect the printer with the socket outlet using the power cord. The outlet for the power cord is at the back side of the printer. Please check again the connections before switching on.

Image 2 b/w – Thermal printer P93E with front and back view

Now, the printer is ready for operation and can be used to print out the gels exposed. The print process can be started with pressing the key "Print" on the keyboard.

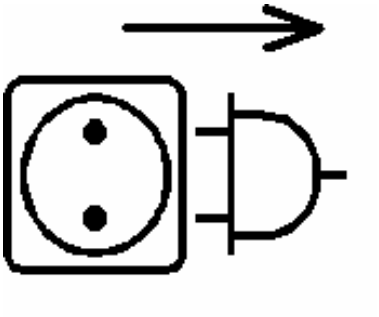
Continuative information can be found in the manual P93E included in the scope of delivery of the printer.

2. Details on safe handling of Gerix 1000

2.1 Important safety instructions

2.1.1 Important details on system voltage

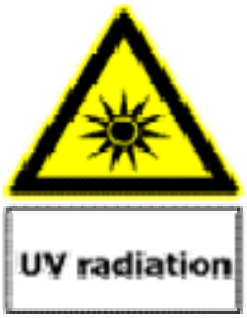
1. When you connect the components with the system voltage please see that a socket outlet grounded is available!
2. Only connect components that are stated the correct voltage at the back with the system voltage!
3. Make sure that the transilluminator is switched off during absence!
4. Unplug the components before repair and maintenance services!
5. Make sure that all parts that might be touched have cooled down!



Plug off!

2.1.2 Important details on UV protection

It is very important to care for appropriate protection of skin and eyes when working with transilluminators. Therefore, please use UV protection glasses or a UV full face protection shield. Please use long-sleeved cloths as well as appropriate gloves!



Caution, Ultra-Violet Radiation!

Protect your eyes!

2.2 Maintenance

Periodic cleaning ensures constant, high-quality exposures. How often your transilluminator has to be cleaned depends on various factors e.g. frequency of use and ambient conditions. We recommend cleaning routinely at regular intervals.

Before cleaning unplug all components from the system voltage.

The cabinets of the single components can be cleaned with a damp cloth. If the cabinet is very contaminated the cloth may also be damped with alcohol.

It is also recommended to clean carefully the cover as well as the filter glass plate with a damp cloth. Please make sure that they are not cleaned with scouring or corrosive detergents as they are damaging the filter glass as well as acetone, benzine and carbon tetrachloride. Also avoid the use of isopropyl alcohol as it could cause stripes on the glass. We recommend a cleaning with alcohol or glass cleaner.

All components of the system must not be dipped into water!

Important hint of use:
Do not deposit objects with sharp edges on the filter glass plate of the transilluminator. They might damage the transilluminator and / or cause inhomogeneous exposures. Before depositing an object on the filter glass plate make sure that it is free of not hardened, humid paste and other aggressive substances that might get on the filter glass plate.

3. System specifications

Basic system:

- operating voltage 100V~ up to 240V~, 50Hz/60Hz
- dimensions (L x D x H) 163 mm x 260 mm x 117 mm
- weight 3.2 kg
- control ports for camera and b/w thermal printer P93E
- 5.7" TFT- colour screen with 640 x 480 pixels
- keyboard with 8 keys
- USB port to save image data on USB stick
- exposure time control of camera from 0.04 sec up to 10.0 sec
- functions of image presentation:
    - coloured display of over- and underexposure
    - invert
- storage of 4 methodical presettings (Settings)

Camera and objective:

- greyscale camera for exposure of 10 seconds maximum
- resolution 752 x 582 pixels
- manual zoom objective 8 – 48 mm

4. Insertion process

The system initialisation takes approx 5 sec. after switching on and ends with displaying ***OK***.

Image 3 Display of successful system initialisation

5. Display

The 8 keys of the keyboard can be divided in 4 groups:

- Control of camera
  - Live, Increase Exposure Time, Decrease Exposure Time, Auto, Capture
- Image processing
  - Display of over- and underexposure, Invert
- Export of the image exposed
  - Save on USB, Print
- System settings
  - Set

Image 4 System Display Gerix 1000

Live	Live-Image-Mode:	Displays images with the shortest exposure time (40 ms)
△	Exposure Mode: Settings, Menu Navigation:	Raises the exposure time Navigates in lists and input fields
▽	Exposure Mode: Settings, Menu Navigation:	Reduces the exposure time Navigates in lists and input fields
Sat / Auto	Sat: Auto:	Displays overexposed and under-exposed areas in the image Automatic settings of the optimum exposure time
Invert / Set	Invert: Set:	Inverts the image System Settings
Capture	Capture Mode:	Stores momentarily the active image Internal memory ("Freeze")
Save to USB	Save to USB:	Stores the active image on USB stick
Print	Print:	Prints the active image on the b/w thermal printer Mitsubishi P93E

6. Functions

6.1 Live-Image-Mode

When pressing this key the Live-Image-Mode is activated and the data stream with the shortest exposure time (40 ms) is displayed.

The active image is immediately displayed regardless of the exposure time used at last (Exposure Mode) or the activated capture mode ("frozen" image in internal memory).

If the function „Saturation" is activated in Exposure / Capture Mode it will automatically be switched off with pressing the button ***Live***.

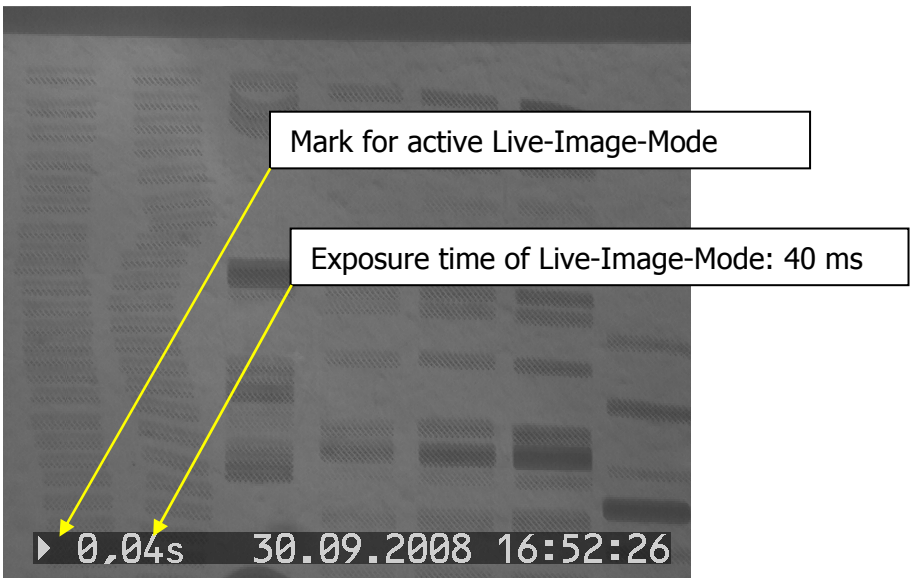


Image 5 Active Live-Image-Mode

6.2 Exposure Mode

With pressing the arrow keys the exposure time can be increased or decreased between the range of 0.04 sec and 10.0 sec. If you press the key shortly the exposure time is changed by 0.04 sec. If you press the key permanently the time changes in 0.40 sec steps.

The arrow keys are used to navigate in the menu (Set).

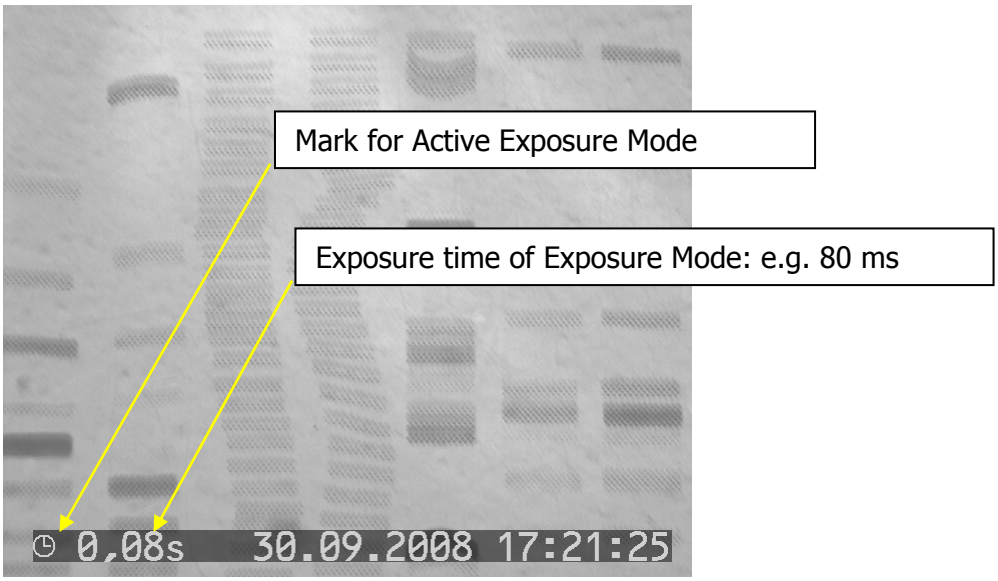


Image 6 Active Exposure Mode

6.3 Saturation / Mode Automatic Illumination

This key is used for 2 functions:

1. Function: ***Sat*** (Saturation)
When pressing this button areas of the image that are over-, underexposed are displayed coloured:
Areas overexposed are marked in red. Areas underexposed of inverted images are marked in blue.
This applies for all images: images currently exposed (Live and Exposure Mode) and images stored (Capture Mode).

If the LED next to the key ***Sat / Auto*** is illuminated the function is activated.

2. Function: ***Auto*** (Automatic Illumination)
Besides the manual setting the exposure time can also be optimised automatically.
If you press the key ***Sat / Auto*** for approx. 3 sec. the automatic mode is started. This is signalised with an "A" in the display and a blinking LED next to the key.
All pixels are analysed with the Gerix 1000 algorithm. It increases the exposure time gradually until the first pixels (50 maximum) are overexposed. As soon as the optimal exposure time is reached the automatic mode will be finished. You will notice this by an acoustic signal. Now, the system will automatically switch to exposure mode.

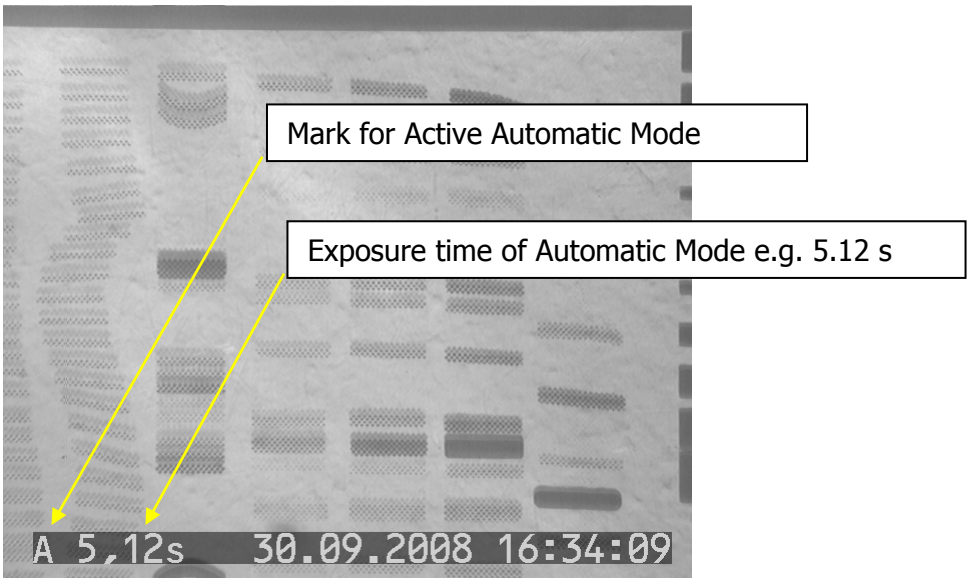


Image 7 Active Mode Automatic Illumination

Important Note:

The automatic mode can be finished with the following keys anytime:

- Arrow keys (Exposure Mode)
  → a change in exposure time is stopped with the current value

- „Capture"
  → the image is automatically stored in the latest state

- „Invert / Set"
  → the image is automatically inverted in the latest state

Important Note:
If an image is overexposed it is **not** recommended to activate the automatic mode as the algorithm is optimised for an increment of exposure time – not for a decrement.

6.4 Invert / Set

This key is used for 2 functions:

1. Function: ***Invert***
When pressing this key the currently displayed image is displayed inverted.
It can be displayed originally by pressing again the key.

2. Function: ***Set*** (System settings)
The system settings are subdivided into 4 ranges:

- Loading of methodic presettings (Load Settings)
- Storing of methodic presettings (Save Settings)
- Basic settings (System Settings)
- Information on the system (Information)

When pressing the key ***Invert / Set*** for approx. 3 sec the menu is shown.

Detailed information on the system settings can be found on pages 20 – 28.

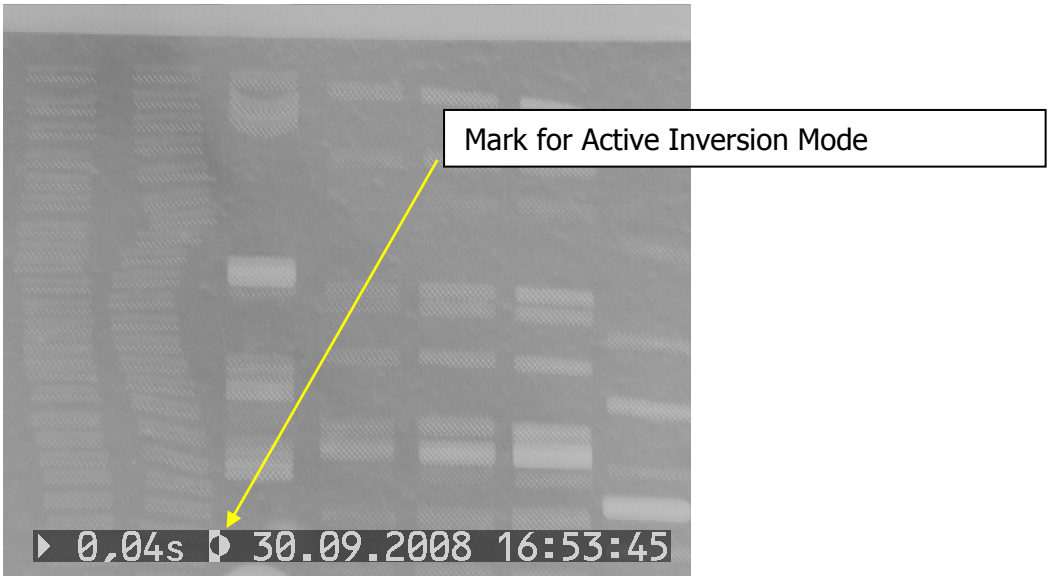


Image 8 Active Inversion Mode

6.5 Capture Mode

With pressing this key the currently exposed image is frozen (saved) and the capture mode is activated. If the image is saved in the internal memory no images are transferred from the camera and displayed any more. Hence, the sample arranged under the camera can be removed and the excitation wavelength (e.g. UV radiation of the transilluminator) be switched off.

An image stored in the capture mode can be checked for over-/underexposure with the key ***Sat / Auto***. The image can also be inverted with the key ***Invert / Set***.

The mode can be exited with pressing again the key ***Capture*** or the key ***Live.***

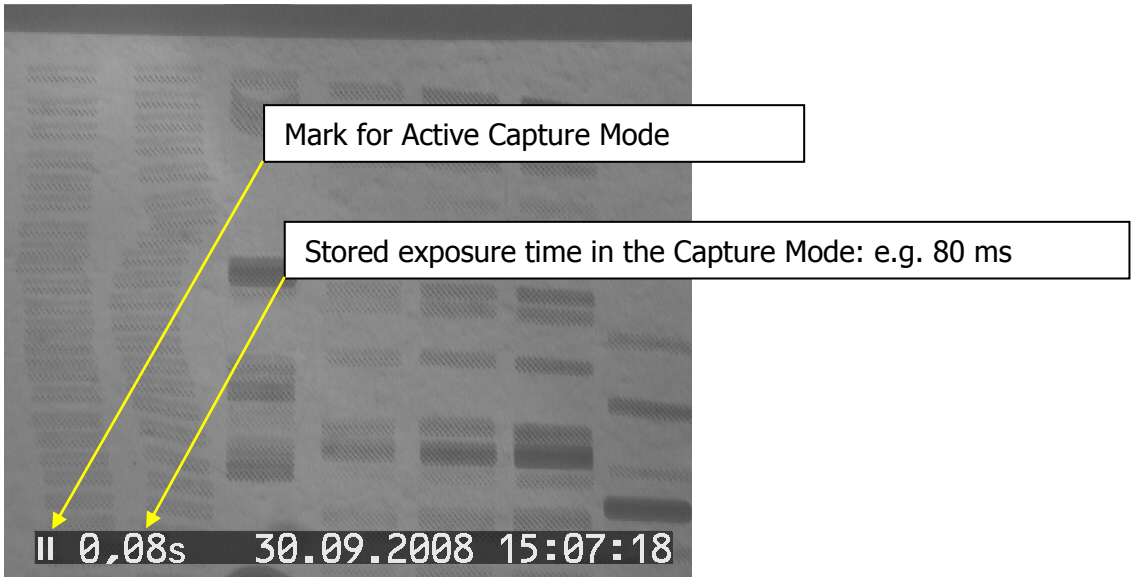


Image 9 Active Capture Mode

6.6 Storage on USB stick

Plug the stick in the system. After connecting the stick with the control unit the USB stick is checked for enough memory capacity.

When checking the LED next to the key ***Save to USB*** is blinking.

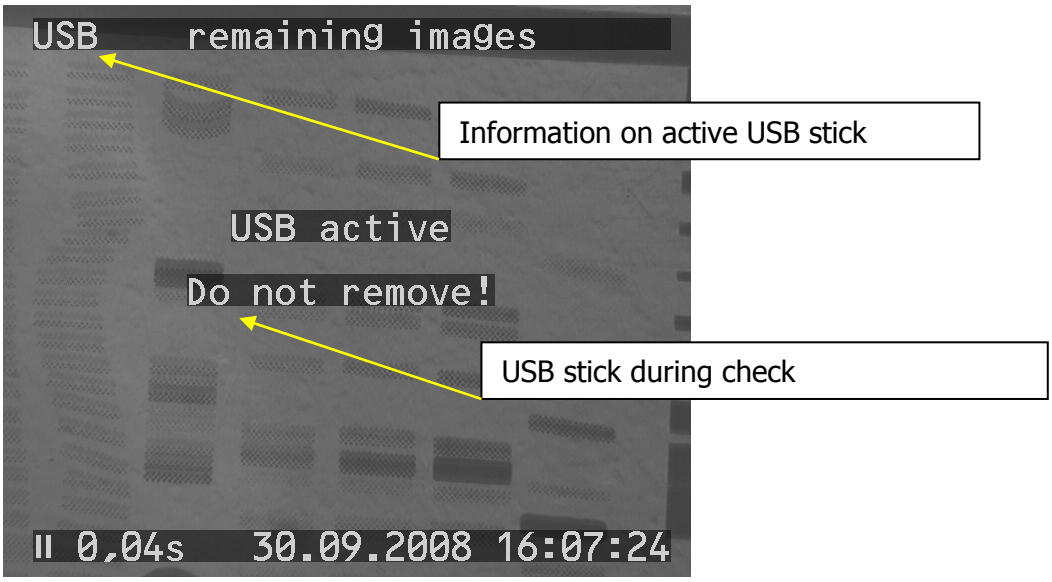


Image 10 Check for memory space of the USB stick connected

After the check is completed and enough memory space is available the quantity of images to be stored on the stick is calculated and displayed in the upper right corner.

The LED next to the key is illuminated constantly as soon as the USB stick is approved.

Important Note:
We recommend to mainly use sticks with a memory capacity of 2 GB maximum. Although, the system is tested for sticks with memory capacity up to 8 GB the use of sticks up to 2 GB is advisable as results can be attained faster due to less expenditure of time used for the checking of the memory capacity.

To save the active image on the USB stick, press the key ***Save to USB***.
The stick is automatically activated and the image saved by Gerix 1000.
The storage takes about 13 sec. A bar illustrates the process.

During the storage process the LED next to the key is blinking.

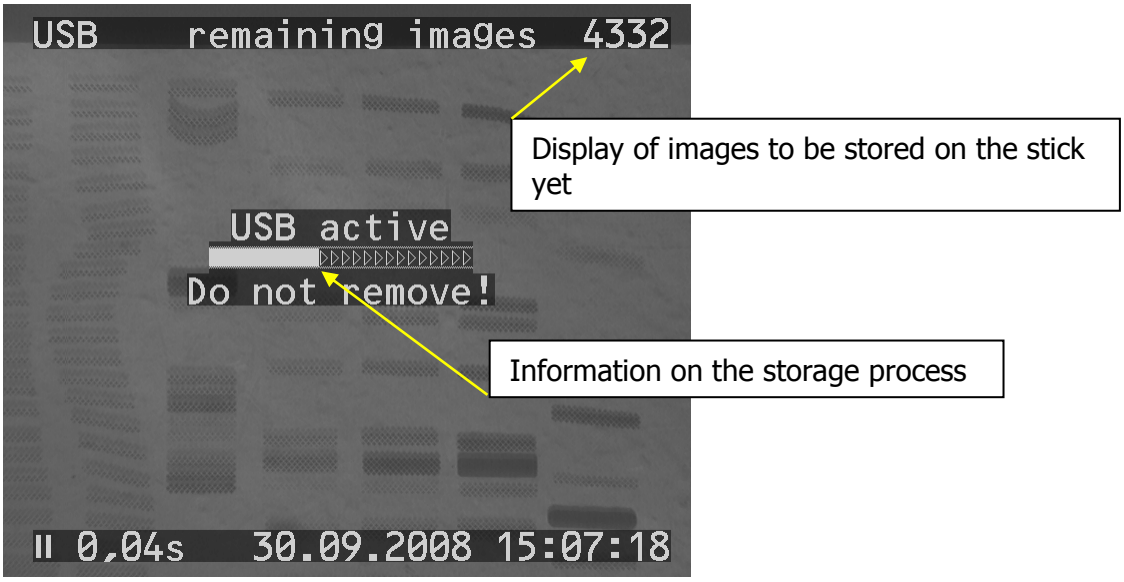

USB remaining images 4332
Display of images to be stored on the stick yet
USB active
Do not remove!
Information on the storage process
II 0,04s 30.09.2008 15:07:18

Image 11 Information during the storage process

The folder **Gerix** is uniquely created on the stick when starting the storage process. Subfolders with the classification **YY_MM_DD** (Year_Month_Day) are created for each day images are stored in. The file name of the image to be exported corresponds to the time **hh_mm_ss** (Hour_Minute_Second) the transfer process has started. The images are saved in TIF format (Greyscale TIF, 8 Bit) with a resolution of 688 x 571 pixels.

The quantity of images that can be saved yet on the stick is recalculated and displayed after completing the storage.

Important Note:
When the message ***USB active Do not remove!*** is displayed or the LED next to the key ***Save to USB*** is blinking do not plug the USB stick off the control unit. Data loss or damage to the stick could be caused!

6.7 Print-out of image displayed

When pressing this key the image currently displayed is printed on the thermal printer Mitsubishi P93E.

The image is printed corresponding to the information displayed i.e. all text information shown are also printed.

Important Note:
You need to make sure that the Gerix system is correctly connected to the printer P93E with the respective cord (3.5mm plug). If it is not connected or if you use another printer the process has to be directly released at the printer itself.

The following printer settings are recommended for successful working:

- Brightness (BRT): 0 [value range -19 … 0 … +19]
- Contrast (CONT): 0 [value range -19 … 0 … +19]
- Gamma (Γ): 5 [value range 1 … 5]

It is based on the aspect that the image displayed is nearly identical to the print-out. In case you would like to change the print-out the settings of brightness, contrast or Gamma can be optimized until the quality requested is reached.

The settings for the size of print-out, quantity of print-outs, size of margin, positive and negative prints can be adjusted to your requirements. Please read through the manual of the printer Mitsubishi P93E.

Important Note:
In case, a different b/w thermal printer or video printer is used we cannot guarantee the functionality of print process as well as the quality of the print-out.

Please inform about the connection specifications and settings of the respective printer in the **manual**.

7. System Settings

When pressing the key ***Invert / Set*** the menu of system settings is shown for 3 sec.

It is structured into 4 ranges:

- Load Settings
- Save Settings
- System Settings
- Information (on the system)

The arrow keys help to navigate between the menu items being activated by pressing the key ***Invert / Set***.

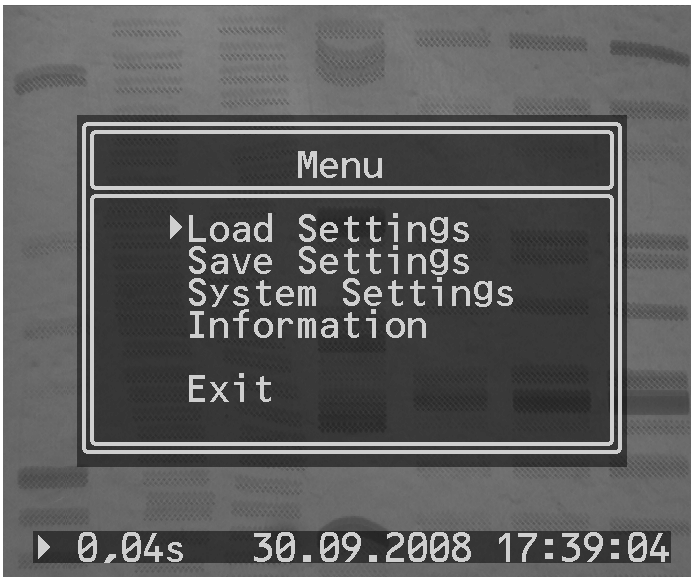


Image 12 Menu of System Settings

7.1 Load Settings

One of four methodical presettings can be selected and used for the automated image exposure for the work with the system Gerix 1000. Prerequisite is the storage of a methodical presetting (menu item ***Save Settings***).

Each of the 4 methodical presettings contains settings for:

- Exposure Time
- Function Over- and Underexposure - On/Off
- Function Invert – On/Off

The arrow keys help to navigate between the settings being activated by pressing the key ***Invert / Set***.

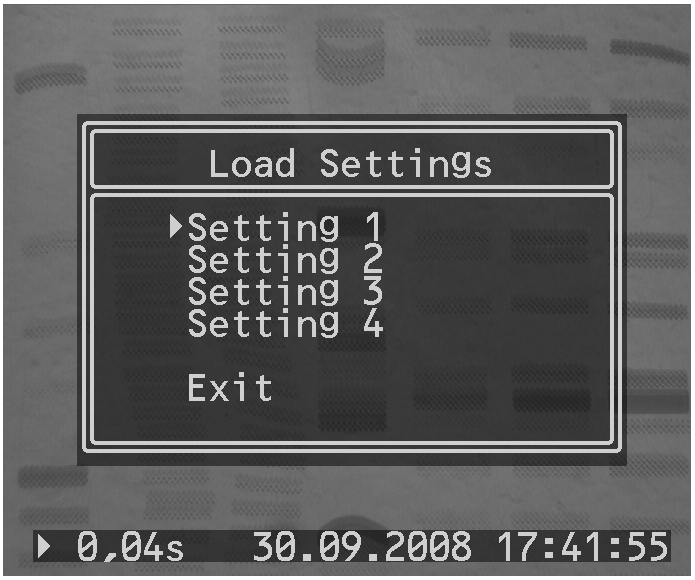


Image 13 Menu Item Load Settings

7.2 Save Settings

Up to 4 individual methodical presettings can be saved to facilitate the work of the users.

Four settings unassigned are available. They can be selected with the arrow keys. To save the settings for exposure time, over- and underexposure and inverting currently used press the key ***Invert / Set***.

Via the menu item ***Load Settings*** all presettings stored can be activated and used for work.

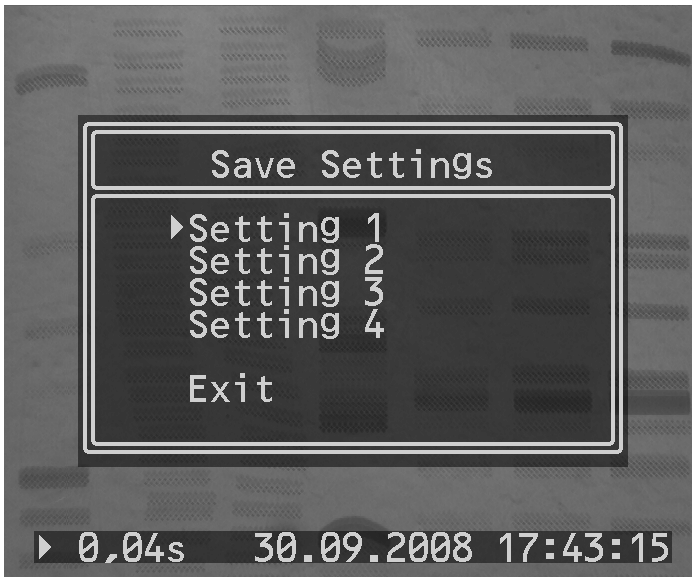


Image 14 Menu Item Save Settings

7.3 System Settings

The system settings are structured in 4 ranges:

- Date Format
- Set Time/Date
- Key tones (Peep) – On/Off
- Autosave – On/Off

These ranges can be selected with the arrow keys and activated by pressing the key ***Invert / Set***.

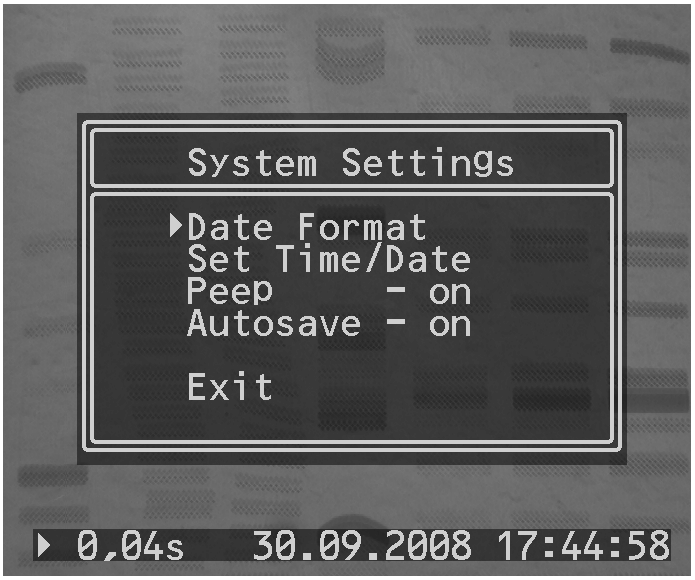


Image 15 Menu Item System Settings

7.4 Date Format

The date can be displayed in 4 different formats:

- DD.MM.YYYY (e.g. 30.09.2008)
- DD/MM/YYYY (e.g. 30/09/2008)
- MM/DD/YYYY (e.g. 09/30/2008)
- YYYY-MM-DD (e.g. 2008-09-30)

The formats can be selected with the arrow keys and activated by pressing the key ***Invert / Set***.

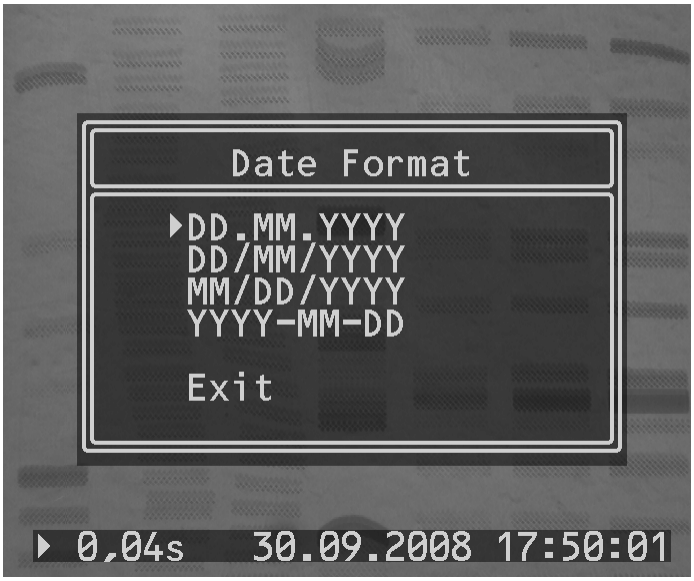


Image 16 Date Format

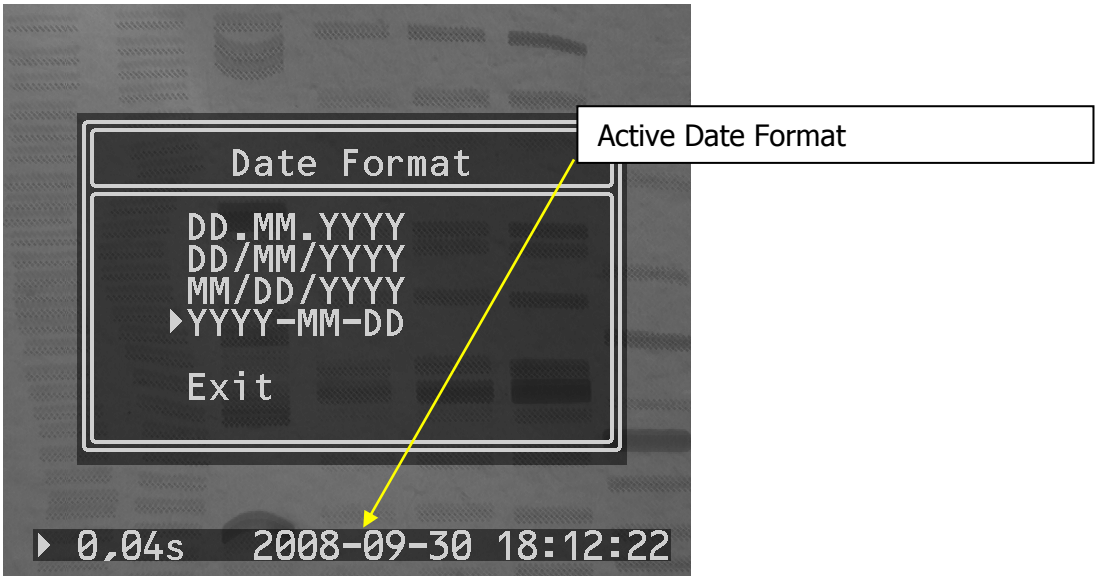


Image 17 Date Format changed

7.5 Set Time/Date

Date and time can be set with this menu item.

Move the cursor (shape of rhombus) to the place that is to be set.

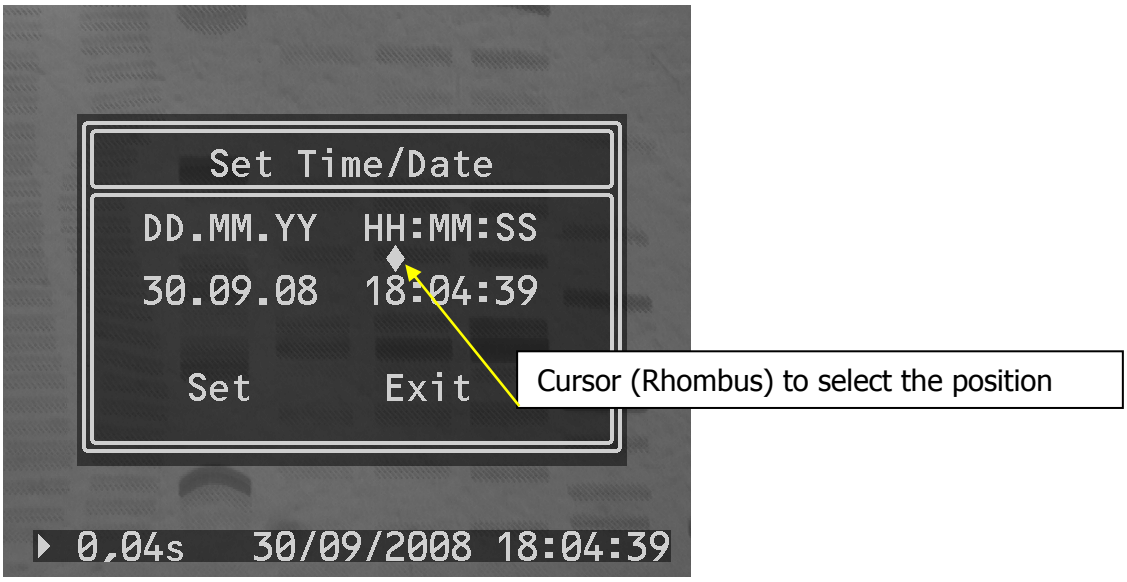


Image 18 Position to be changed

By pressing the key ***Invert / Set*** the cursor changes to a triangle.

Now, the value requested can be set with the arrow keys. When the correct value is set it has be transferred by pressing the key ***Invert / Set***. The cursor changes again to a rhombus.

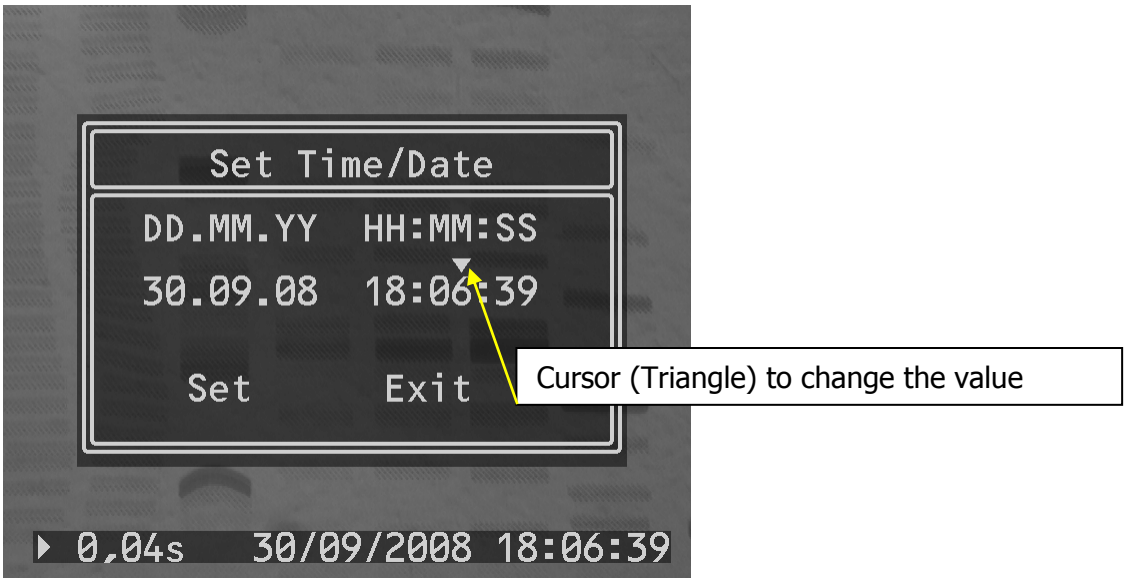


Image 19 Change of position value

Finally, the changed values need to be saved. For doing this move the cursor to the command ***Set*** and press the key ***Invert / Set***.

To exit the menu move the cursor to the command ***Exit*** and press the key ***Invert / Set***.

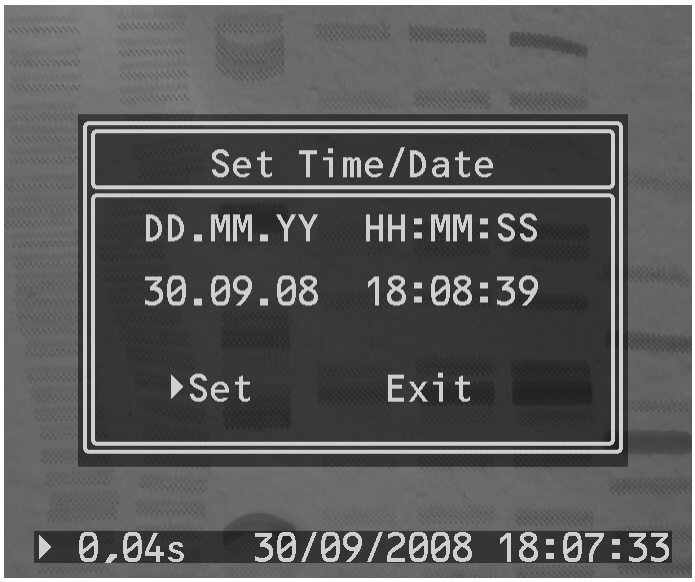


Image 20 Transfer of changed values

Important Note:
In case changed values are not to be saved or the setting of date and time is to be cancelled the menu can be exited anytime.

7.6 Setting of key tone and Autosave

The key tone (***Peep***) as well as the automatic storage of settings can be activated or deactivated. For doing this select the requested command with the arrow keys. By pressing the key ***Invert / Set*** the function requested is switched on or off.

The function ***Autosave*** supports fast process flows directly after system start. If this function is activated the following settings will automatically be saved when switching off:

- Exposure Time
- Over-, Underexposure – On/Off
- Invert – On/Off

The settings stored with ***Autosave*** are directly activated when the system is again switch on.

After startup Gerix 1000 displays a live image to correctly place a sample on the transilluminator and to set e.g. zoom and focus. The exposure time stored to expose the image is activated with the arrow keys (***Increasing of exposure time*** – ***Exposure Mode***).

The function ***Peep*** (de)activates a signal emission when pressing a key.

Important Note:
The deactivation of the key tones has no influence on acoustic information of other system functions (e.g. automatic setting of optimal exposure time).

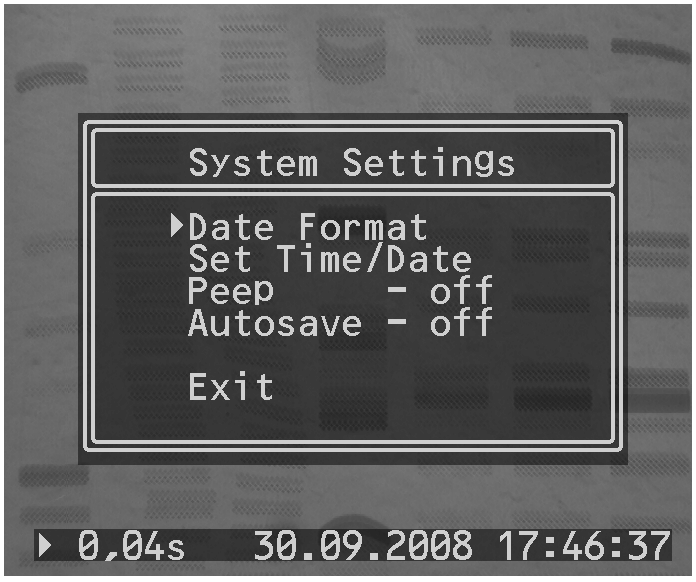


Image 21 Setting of key tone and automatic storage

7.7 Information

This menu item displays the version of Gerix 1000 and USB firmware. The information can be used required e.g. for service enquiries.

Image 22 Menu Item Information

8. Contact Details

We wish a pleasant working and excellent results with the system.

If you have any suggestions or hints resulting from the work, please do not hesitate to contact us. We are always prepared to optimize the functions of the system Gerix1000.

Please contact:

Biotec-Fischer GmbH Tel.: +49-6408-6072
Daimlerstrasse 6 Fax: +49-6408-64165
35447 Reiskirchen e-mail: info@biotec-fischer.de